E-Commerce Sales Analysis Documentation

1. Introduction

This document provides a comprehensive analysis of an e-commerce sales dataset using SQL. The analysis includes key insights into product performance, category trends, pricing, customer ratings, and sales metrics. The goal is to help stakeholders understand sales patterns, identify top-performing products, and optimize business strategies.

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2. Dataset Overview

The dataset contains the following columns:

Column	Description
ProductID	Unique identifier for each product.
ProductName	Name of the product.
Category	Category to which the product belongs.
Price	Cost of the product.
Rating	Average customer rating (scale-based).
NumReviews	Number of customer reviews for the product.
Discount	Discount rate applied to the product.
Sales	Number of units sold.
DateAdded	Date when the product was introduced.
City	City where the product is sold.

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3. Key Findings

3.1 Product & Category Analysis

- **Total Products:** `[X]` unique products were identified.

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- **Categories:** `[Y]` distinct categories exist in the dataset.
- **Top 5 Categories by Average Rating:**
    - *Category 1* (Avg Rating: `[Z]`)
    - *Category 2* (Avg Rating: `[Z]`)
    - *...*
- **Top 5 Categories by Sales Volume:**
    - *Category A* (Total Sales: `[N]`)
    - *Category B* (Total Sales: `[N]`)
    - *...*

3.2 Pricing & Discount Trends

- **Most Expensive Products:**
    - *Product X* (Price: `$[P]`)
    - *Product Y* (Price: `$[P]`)
    - *...*
- **Average Discount by City:**
    - *City 1* (Avg Discount: `[D]%`)
    - *City 2* (Avg Discount: `[D]%`)
    - *...*

3.3 Sales Performance

- **Top-Selling Product per Category:**

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    - *Category A*: *Product M* (Sales: `[S]`)
    - *Category B*: *Product N* (Sales: `[S]`)
    - ...

- **Products with Above-Average Ratings:**
    - *Product P* (Rating: `[R]`)
    - *Product Q* (Rating: `[R]`)
    - ...

3.4 Inventory & Revenue Insights

- **Stock Status:**
    - `[X]%` of products are **In Stock**, while `[Y]%` are **Out of Stock**.

Revenue Calculation:
Revenue was computed as:

Revenue = Sales × (Price × (1 - Discount))

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4. Automated Reporting & Views

4.1 Product Overview View (`vw_product_overview`)

A dynamic view was created to track:

- Product details (ID, Name, Category, Price)
- Discounted price
- Stock status (In Stock/Out of Stock)

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- Revenue generated per product

4.2 Daily Product Summary Table (`DailyProductSummary`)

An automated procedure (`run_daily_product_summary()`) updates this table daily with:

- **Total Sales** per category
- **Average Price & Rating** per category
- **Top-Selling Product** per category

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5. Recommendations

1. **Focus on High-Rated Categories**
   Invest in marketing for categories with high ratings but lower sales.
2. **Optimize Discounts**
   Adjust discounts in cities with low average discounts to boost sales.
3. **Restock Popular Products**
   Prioritize restocking for top-selling products that are out of stock.
4. **Leverage Revenue Data**
   Identify high-revenue products and expand their availability.

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6. Conclusion

This analysis provides actionable insights into product performance, customer preferences, and sales trends. By leveraging SQL queries, views, and automated reporting, we ensure data-driven decision-making for business growth.

Next Steps:

- Expand analysis to include seasonal trends.
- Integrate customer feedback for deeper insights.

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